

ATTACHMENT A

Rule 1.126
43 31. A vehicular wireless voice and data communication system, comprising

a. a cellular telephone transceiver mounted within a vehicle for accessing a cellular telephone network operating in accordance with a standardized cellular network operating protocol to send and receive voice and data signals over a cellular telephone network, the cellular telephone transceiver including circuitry specifically adapted to cause the cellular telephone transceiver to respond to cellular transceiver control signals formatted in accordance with a standardized cellular network operating protocol specific to the cellular telephone network;

F1
b. a computing device, including a memory sufficient to allow the computing device to be used in the manner of a portable computer, operable to generate transceiver control signals to control communication over the cellular wireless network from within the vehicle, the control signals being formatted in accordance with a standardized computer data communication protocol that differs from the standardized cellular network operating protocol implemented by the cellular telephone transceiver, and

c. circuitry for connecting the cellular telephone transceiver and the computing device to allow transceiver control signals, generated by the computing device and formatted in accordance with the standardized computer data communication protocol, to be implemented by the cellular telephone transceiver using the standardized cellular network operating protocol.

Rule 1.126
44
32. A cellular telephone data transmission apparatus, comprising

a. a cellular telephone transceiver for accessing a cellular wireless network for sending and receiving voice and data signals over a cellular telephone network, the cellular telephone transceiver operating in different modes including a call placement mode and a data transceiving mode;

b. a computing device including a memory sufficient to allow the computer device to operate as a portable computer, the computing device operating to send and receive data over the cellular telephone network when the cellular transceiver is operating in the data transceiving mode, and

c. a circuit connected with the cellular telephone transceiver and the computing device for determining when the cellular telephone transceiver is operating in the data transceiving mode and causing the computing device to send and receive data over the cellular telephone network only when the transceiver is operating in the data transceiving mode.

✓ 35. A combined portable computing and cellular voice and data communication device, comprising

a. a cellular telephone transceiver for accessing a cellular telephone network for either voice or data communication, the cellular transceiver operating in accordance with a standardized cellular network operating protocol to send and receive voice and data signals over a cellular telephone network, the cellular telephone transceiver including circuitry specifically adapted to cause the cellular telephone transceiver to respond to cellular transceiver control signals formatted in accordance with the standardized cellular network operating protocol specific to the cellular telephone network;

b. a portable computer operating to generate transceiver control signals to control communication over the cellular telephone network, the control signals being formatted in accordance with a standardized computer data communication protocol that differs from the standardized cellular network operating protocol implemented by the cellular telephone transceiver, the portable computer including computer memory sufficient to allow for portable computer uses other than generating cellular telephone transceiver control signals; and

c. circuitry for connecting the cellular telephone transceiver and the portable computer to allow transceiver control signals, generated by the portable computer and formatted in accordance with the standardized computer data communication protocol, to be implemented by the cellular telephone transceiver using the standardized cellular network operating protocol,

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Rule 1, 126
whereby the portable computer, in one mode, may be used to originate control signals to control the operation of the transceiver to control the transceiver to allow user data processed by the portable computer to be sent over the cellular network and to allow user data to be received by the portable computer for subsequent processing by the portable computer and, in another mode, may be used for data processing functions other than control of the cellular telephone transceiver.

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34. A system for transferring data between a mobile station and at least one fixed station over a cellular telephone network comprising:

a vehicular mobile radio telephone network access device capable of bidirectionally communicating voice and data between the mobile station and a fixed station;

a computer in said vehicle, the computer providing and receiving data signals;

an interface circuit connected between the computer and the vehicular mobile radio telephone network access device for transmitting data signals to and from the vehicular mobile radio telephone network access device, said interface circuit providing lines for connection to the vehicular mobile radio telephone network access device, said lines including:

a data transmit line for transmitting data signals received from the computer to the vehicular mobile radio telephone network access device;

a data receive line for transmitting data signals from the vehicular mobile radio telephone network access device to the computer; and

plural control lines for providing at least one digital control signal, including a dial control signal, to the vehicular mobile radio telephone network access device to control the operation of the device;

dialing circuit in said interface circuit connected to at least one of the control lines for allowing the computer to cause the vehicular mobile radio telephone network access device to set up a cellular call; and

a program residing in said computer, said program causing said dialing means to set up the cellular call over the radio telephone network.

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35. The cellular telephone data communication system of claim 34, further including a modem operably connected to the computer for modulating data signals received from the computer for transmission over the vehicular mobile radio telephone network access device and for demodulating data signals received from the vehicular mobile radio telephone network access device.

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36. The cellular telephone data communication system of claim 34 wherein said interface circuit inserts error correction bits into said data signal.

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37. The cellular telephone data communication system of claim 34 wherein said data signal is packetized.

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38. The cellular telephone data communication system of claim 37 wherein said packetized data signal comprises packets of variable length, said packet length adjusted according to signal quality.

51 39. The cellular telephone data communication system of claim ⁴⁶34 wherein said computer, said interface device and said vehicular mobile radio telephone network access device is powered by a vehicle battery.

52 40. A cellular computer data transmission system disposed in a vehicle for communicating bidirectional computer data to and from a fixed location over a cellular telephone network, the system comprising a radio transceiver having a digital controller for generating control signals including network access signals for controlling the operation of the radio transceiver for communicating on the cellular network, a computer separate from the digital controller, the computer operating to control access to the cellular telephone network and for originating and receiving data and an interface for providing a data path between the computer and the radio transceiver, the interface containing a modem for modulating and demodulating data signals for transmission on the cellular telephone network, the interface including parallel signal lines between the computer and the radio transceiver including at least a transmit signal line, a receive signal line, and a control line, whereby data are communicated between the computer in the vehicle and a fixed station over the cellular network.

51 41. The cellular computer data transmission system of claim ⁵²40 wherein the data contain error correcting bits.

51 42. The cellular computer data transmission system of claim 40 wherein the data are packetized.

59 43. The cellular computer data transmission system of claim ⁵⁴42 wherein the packetized data comprise packets of variable length, the length adjusted according to error rate.

56 44. A vehicle mobile computer communications system comprising:

a radio transceiver means for communicating over a cellular telephone network;

a digital controller for generating control signals including network access signals for controlling the operation of the radio transceiver;

a computer means separate from the digital controller for running at least one application program providing and receiving data;

an interface means disposed between said computer means and said radio transceiver means, said interface means containing a modem and parallel signal lines including at least a transmit line, a receive line and plurality of control lines;

said interface means transferring data from said application program in said computer means to said radio transceiver means for transmission over said cellular telephone network and transferring received data from said radio transceiver means to said application in said computer means.

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45. The vehicle mobile computer communications system of claim ⁵⁶44 wherein said computer means inserts error correction bits into said data.

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46. The vehicle mobile computer communications system of claim ⁵⁶44 further comprising dial means contained in said interface means for causing said transceiver means to place a call over said cellular communications network.

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47. The vehicle mobile computer communications system of claim ⁵⁸46 wherein said application program causes said dial means to automatically place a call over said cellular communications network.

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48. A cellular telephone data communication system for communicating data over a cellular telephone system between a fixed station and a mobile station comprising:

at least one mobile radio transceiver having a digital controller for generating control signals including network access signals for controlling the operation of the radio transceiver, said mobile radio transceiver being coupled to a computer separate from said digital controller, said mobile radio transceiver capable of bidirectionally communicating voice and data between said mobile station and said fixed station, said computer being capable of executing at least one application program;

said application program causing said mobile radio transceiver to establish communication with said fixed station upon the occurrence of a predetermined event, said application program then sending data to said fixed station.

Rule 1.126 { ⁶⁰
49. The cellular telephone data communication system of claim ~~48~~ further comprising an interface disposed between said radio transceiver and the computer, the interface allowing the computer to control said radio transceiver.

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50. The cellular telephone data communication system of claim ~~49~~ wherein said interface inserts error correction bits into said data.

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51. The cellular telephone data communication system of claim ~~48~~ wherein said data is packetized.